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| EXAMINER |
|---|
| SRIVASTAVA, KAILASH C |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1651 | |

DATE MAILED: 06/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/918,311 | LEBOEUF ET AL. | |
| | Examiner | Art Unit | |
| | Dr. Kailash C. Srivastava | 1651 | |

*-- The MAILING DATE of this communication appears on the c ver sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *March 06, 2003 as Paper Number 8* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *1-8,17-32 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-16 and 33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

## DETAILED ACTION

1. Applicants' response filed March 19, 2003 as Paper Number 8 to election requirement in Office Action mailed February 25, 2003 as paper number 7 is acknowledged and entered.

2. Claims 1-34 are pending.

### *Restriction/Election*

3. Applicants' election **without** traverse of Group II, Claims 9-16 and 33 filed March 19, 2003 as Paper Number 8 to election requirement in Office Action mailed February 25, 2003 as paper number 7 is acknowledged and entered. Since the election is made **without** traverse, the restriction requirement is deemed proper and is made FINAL.

Accordingly, Claims 1-8, 17-32 and 34 are withdrawn from further consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03. It is suggested that the non-elected claims be canceled in response to this Office action to expedite prosecution.

4. Claims 9-16 and 33 are examined on merits.

### Objection to Information Disclosure Statement

5. The information disclosure statement filed January 03, 2002 as Paper Number 5 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information. Applicants have not provided legible copies of each of the patent and non-patent literature listed on form 1449. Furthermore, they have not elaborated the reason for listing those reference or how they relate to claimed invention. Therefore, the Information disclosure Statement has been placed in the application file, but the information referred to therein has not been considered.

### PRIORITY

6. Acknowledgment is made of applicants' claim for foreign priority based on an application filed in France on February 8, 2001. It is noted, however, that applicant has not filed a certified copy of the French application as required by 35 U.S.C. § 119(b).

## Objection To Specification

7. The specification is objected to because page 2, Line 8 is on a defective/damaged sheet of paper. Consequently, some text is illegible. Examiner requests a replacement sheet.

## *Claim Rejections - 35 U.S.C. § 112*

8. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> ***The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.***

9. Claims 9-16 and 33 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with those claims. The claims are directed to a method for infrared spectrophotometric/ spectroscopic analysis of wine/grape must /fermenting grape must samples.

From the record of the present written disclosure, the specification, while enabling for spectrophotometric/spectroscopic analysis of wine/grape must /fermenting grape must samples (see Specification page 7, Line 25 to Page 8, Line 23) does not reasonably provide enablement to a method for infrared spectrophotometric/ spectroscopic analysis of wine/grape must /fermenting grape must samples (See Specification Page 5, Lines 24-27), because for infrared spectrophotometric/ spectroscopic analysis the sample should be completely dry (i.e., free of water) because water absorbs in the infrared region (See Pavia et al., Introduction to Organic Laboratory Techniques, 1988, Saunders College Publishing, Page 660, Lines 8-10). However, grape must/fermenting grape must comprises 70-90% water on the weight basis of fruit/berries (see, e. g., FAO book) and unfortified wine obtained from fermenting grape must contains only 9%-14% alcohol by volume (See Ayres et al., Microbiology of Food, 1980, W.H. Freeman and Co., Page 167, Lines 10-12). Thus, in absence of a clearly stated step to remove water from said sample the specification is not enabled for infrared spectrophotopmetric/ spectroscopic analysis of wine/ grape must/ fermenting grape must samples.

An ordinary artisan would not be able to practice the invention as disclosed because applicants have not disclosed a sample preparation step for infrared spectrophotometric

analysis of a sample of wine/grape must/fermenting grape must. Thus, undue experimentation will be required to quantify chemical components of samples cited *supra* (In *re Wands*, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). Furthermore, applicants have not provided any guidance or examples in the specification to prepare samples for said analysis; whereas said analysis is critical part of applicants' invention and also prior art on infrared spectrophotometric analysis of a sample of wine/grape must/fermenting grape must is very limited.

10. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

> ***The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.***

11. Claims 9-16 and 33 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claims 9-16 and 33 as written are very confusing, difficult to understand and thus indefinite because for e.g., Claim 9 fails to recite one or more essential steps (e.g., sample preparation) necessary in spectrophotometric analysis of a liquid, wherein said liquid is a wine/ grape must/ fermenting grape must. Furthermore, it is not clear from the claim as presently written to correlate presence of a certain compound (e.g., 2, 3-butanediol) with the presence of a certain group of microbiological agent. Applicants are requested to clearly, concisely and succinctly rewrite said claims to clearly claim applicants' invention. Applicants are reminded to ensure that no new matter is added while clearly, concisely and succinctly rewriting said claims.

- Claim 9, at Lines 16-17 recites the limitation "the wine and/or grape must and /or fermenting grape must". There is insufficient antecedent basis for this limitation in the cited claim.

- Claim 9, at Lines 18-19 recites the limitation "concentration of gluconic acid revealing the presence of a first microbiological agent". There is insufficient antecedent basis for this limitation in the cited claim because Claim 9 fails to recite one or more essential steps necessary to correlate presence of a given compound with the presence of a certain group of microbiological agent.

- Claim 9, at Lines 20-21 recites the limitation "concentration of acetaldehyde and/or ethyl acetate revealing the presence of a second microbiological agent". There is insufficient antecedent basis for this limitation in the cited claim because as discussed *supra* Claim 9 fails to recite one or more essential steps necessary to understand as to how presence of a given compound in a given sample is related/indicative of the presence of a certain group of microbiological agent.

- Claim 9, at Lines 22-23 recites the limitation "concentration of acetic acid and/or ethyl acetate revealing the presence of a third microbiological agent". There is insufficient antecedent basis for this limitation in the cited claim because as discussed *supra* Claim 9 fails to recite one or more essential steps necessary to correlate presence of a given compound to the presence of a certain group of microbiological agent.

- Claim 9, at Lines 24-25 recites the limitation "concentration of lactic acid revealing the presence of a fourth microbiological agent". There is insufficient antecedent basis for this limitation in the cited claim because as discussed *supra* Claim 9 fails to recite one or more essential steps necessary to correlate presence of a given compound to the presence of a certain group of microbiological agent.

- Claim 12, at Lines 2-3 recites the limitation "a quality index is created from the results of the mathematical processing means". There is insufficient antecedent basis for this limitation in the cited claim because in Claim 9 from which Claim 12 follows said limitation is not recited. Examiner suggests to use "further comprising" language.

- Claim 13, at Lines 2-5 recites the limitation "the sample is taken into a second analysis cell of a second analysis means of spectrophotometric analysis" and "the analysis means in the infrared and the visible domain". There is insufficient antecedent basis for this limitation in the cited claim because in Claim 9 from which Claim 13 follows neither a "second means of a spectophotometric analysis", nor "analysis means in infrared and the visible domains" is claimed. Moreover, Claim 13 is awkwardly constructed and confusing in the last section. Examiner suggests to use "further comprising" language to clarify this claim.

- The limitation recited in Claim 14 at Lines 1-6 does not have sufficient antecedent basis for said limitation in the cited claim because Claim 9 from which Claim 14

follows does not recite presence of mannitol or sorbitol as indicative of the presence of " the first microbiological agent" in said sample.

- The limitation recited in Claim 15 at Lines 1-6 does not have sufficient antecedent basis for said limitation in the cited claim because Claim 9 from which Claim 15 follows does not recite presence of arabitol, 2, 3-butanediol, methyl-3-butanol-1, glycerol and/or isoamyl acetate as indicative of the presence of " the second microbiological agent" in said sample or that said "the second microbiological agent" is "yeast".

- In Claim 16 at Lines 2, the phrase "acetic bacteria" renders that claim indefinite because as presented, Claim 16 does not clarify "acetic bacteria". Are these the bacteria that convert some compound to acetic acid or they metabolize acetic acid or salts thereof to some other product or what is meant by the phrase "acetic bacteria"? Examiner requests appropriate clarification/correction.

- The limitation recited in Claim 16 at Lines 1-5 does not have sufficient antecedent basis for said limitation in the cited claim because Claim 9 from which Claim 16 follows does not recite presence of 2, 3-butanediol as indicative of the presence of "the third microbiological agent" in said sample or that said "the third microbiological agent" is "acetic bacteria".

- In Claim 33 at Lines 2, the phrase "lactic bacteria" renders that claim indefinite because as presented, Claim 33 does not clarify "lactic bacteria". Are these the bacteria that convert some compound to lactic acid or they metabolize lactic acid or salts thereof to some other product or what is meant by the phrase "lactic bacteria"? Examiner requests appropriate clarification/correction.

- The limitation recited in Claim 33 at Lines 1-6 does not have sufficient antecedent basis for said limitation in the cited claim because Claim 9 from which Claim 33 follows does not recite presence of mannitol and/or 2, 3-butanediol as indicative of the presence of "the fourth microbiological agent" in said sample or that said "the fourth microbiological agent" is "lactic bacteria".

All other claims depend directly from the rejected claims and are, therefore, also rejected under 35 U.S.C. §112, second paragraph for the reasons set forth above.

## Claim Rejections – 35 U.S.C. § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> ***A person shall be entitled to a patent unless –***
>
> ***(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.***

13. Claims 9-13 are rejected under 35 U.S.C. §102(b) as anticipated by Abstract from Patz et al. (Wein Wissenschaft, 1999, 54 Pages 80-87) with evidence provided by Asselain et al. (U.S. Patent 5,453,619).

Patz et al. teach a method (See Abstract) to determine concentrations of different components (e.g., volatile acids, lactic acid and glycerol) of wine through FTIR spectroscopy and chemometrics, wherein spectrophotometric data were used as a data set for a partial least squares regression to develop a calibration curve. Thus, the prior art reference determines the concentration of same components (volatile acid, lactic acid and glycerol) in wine according to the same technique, i.e., correlating the spectrophometric spectral analysis data with a mathematical processing (see teachings from Asselain et al., wherein a method is disclosed to determine concentrations of a number of components of a given liquid by continuously obtaining spectra of said aqueous liquid first in infra-red and subsequently in visible domains and calculating concentrations of assayed components through standard equations; Abstract, Column 2, Line 46 to Column 3, Line 49, Column 9, Line 48 to Column 10, Line 21) as is recited in the instantly claimed invention. Therefore, the prior art method inherently must also function in the same way as the instantly claimed invention. Furthermore, Patz et al. teach an FTIR technique to analyze/identify different analytes in wine. The FTIR inherently displays data on a computer screen and said data is also printed as a paper copy.

Therefore, the reference is deemed to anticipate the cited claims.

Please note that in this rejection under 35 U.S.C. §102(b), abstract from Asselain et al. reference is cited to merely support the method from Patz et al., and not as a prior art reference.

## Claim Rejections - 35 U.S.C. § 103

14. The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> ***.(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.***

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. § *102*(f) or (g) prior art under 35 U.S.C.§ 103(a).

16. Claims 9-16 and 33 are rejected under 35 U.S.C. § 103 (a) as obvious over Abstract from Patz et al. (Wein Wissenschaft, 1999, 54 Pages 80-87) and Asselain et al. (U.S. Patent 5,453,619) in view of Singleton et al. (Singleton, P. et al. Dictionary of Microbiology and Molecular Biology, 1991, John Wiley and Sons. Pgs., 485 and 956) and Abstracts from Ui et al. (Ui, S. et al., Hakkokokgaku Kaishi 1986, 64 Page 161-168), Omori et al. (Omori, T. et al., J. Fermentation and Bioengineering, 1997, Vol. 83 Pages 64-69) and Sponholz et al. (Sponholz, W.R. Chemie Mikrobiologie Technologie der Lebensmittel, 1986. Volume 10, Pages 19-24).

Teachings from Patz et al. have been discussed *supra.* Patz et al., however, do not indicate which mathematical algorithms are used to correlate spectral data to obtain and display concentrations of different components of the liquid being analyzed.

Asselain et al. teach a method to determine concentrations of a number of components of a given liquid by continuously obtaining spectra of said aqueous liquid first in infra-red and subsequently in visible domains and calculating concentrations of assayed components through standard equations (Abstract, Column 2, Line 46 to Column 3, Line 49, Column 9, Line 48 to Column 10, Line 21).

One having ordinary skill in the art would have been motivated to modify the teachings from Patz et al. (See Abstract) according to the teachings from Asselain et al. (Abstract, Column 2, Line 46 to Column 3, Line 49, Column 9, Line 48 to Column 10, Line 21) to continuously obtain spectra in infra red and visible domains through spectrophotometric analysis of a liquid sample, wherein said liquid sample is wine because

both Patz et al. and Asselain et al. teach analysis of aqueous liquid samples through infrared spectroscopy and correlation of spectral data so obtained with mathematical equations to construct a calibration curve and further utilize said calibration curve to determine the concentration of individual compounds present in said liquid sample (e.g., wine). Asselain et al. remedy the deficiency of disclosing the exact mathematical equations in teachings from Patz et al.

Thus, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to modify teachings from Patz et al. according to the teachings from Asselain et al. to apply infrared spectroscopy/spectrophotometry to analyze wine, because each one of the prior art reference teach methods to determine concentrations of different components in wine. While Patz et al. teach infrared spectrophotometry and chemometric methods to analyze wine/liquid samples, Asselain et al., remedy the deficiency in teachings of Patz et al. by teaching the exact mathematic equations to obtain the concentration of different components.

None of the above discussed prior art references, however, teach that presence and concentration of a given compound (e.g., glycerol or 2,3-butanediol) in wine/grape must/fermenting grape must is indicative of the presence of a given microbiological agent.

Singleton et al. teach acetic (i.e., *Acetobacter* spp.) and lactic (i.e., *Leuconostoc mesenteroides*) bacteria in spoiled wine wherein *Acetobacter* Spp. Manifest presence of acetic acid (Page, 956, Column 1, Line 62 to Page 2, Line 14). Since *Leuconostoc spp.* , produce lactic acid (Page 485, Column 2, Lines 28-45) and *Acetobacter* Spp. and *Leuconostoc mesenteroides* are present in spoiled wine, intrinsically Singleton et al. teach presence of acetic and lactic acid producing bacteria in wine or conversely, presence of acetic and lactic acids as manifestation of presence of acetic and lactic bacteria. Similarly, abstract from Ui et al. correlates concentrations of butanediol in wine to presence of yeast (lines 18-22), Omori et al. teach high glycerol producing sake and wine yeasts (Lines 17-18) and Sponholz et al. teach that *Botrytis cinerea* produces small amount of mannitol, that *Botrytis cinerea* infects grapes and when grapes are infected with said microorganism alditols (i.e., intrinsically sorbitol/mannitol) increse in wine (Abstract, Lines 5-7).

One having ordinary skill in the art would have been motivated to incorporate the teachings from Singleton et al. (Page 956, Column 1, Line 62 to Page 2, Line 14; Page 485, Column 2, Lines 28-45), as well as of Abstracts from Ui et al., Omori et al. and Sponholz et

al. into methods that Patz et al. and Asselain et al. teach to continuously obtain spectra in infra red and visible domains through spectrophotometric analysis of a liquid sample, wherein said liquid sample is wine and on the basis of the concentrations and identity of specific chemical components displayed from said spectrophotometric analysis, would have correlated the presence of said components as manifestation of th presence of *Botrytis cinerea* (See, Abstract, Sponholz et al., Lines 5-7), yeast (Abstract, Ui et al. lines 18-22; Abstract, Omori et al., Lines 17-18), acetic bacteria and lactic bacteria (See Singleton et al., Page 956, Column 1, Line 62 to Page 2, Line 14; Page 485, Column 2, Lines 28-45), because all of the prior art references teach analysis of wine components and additionally, Singleton et al., Abstracts from Ui et al., Omori et al., and Sponholz et al., teach that microorganisms cited in each one of the prior art references produce a given unique compound (e.g., lactic acid bacteria produce lactic acid). While, Patz et al. (See Abstract) and Asselain et al. (Abstract, Column 2, Line 46 to Column 3, Line 49, Column 9, Line 48 to Column 10, Line 21) teach analysis of aqueous liquid samples through infrared spectroscopy and correlation of spectral data so obtained with mathematical equations to construct a calibration curve and further utilize said calibration curve to determine the concentration of individual compounds present in said liquid sample (e.g., wine) and Asselain et al. remedy the deficiency of disclosing the exact mathematical equations in teachings from Patz et al., Singleton et al., Ui et al., Omori et al., and Sponholz et al. remedy the deficiencies in teachings from both Patz et al. and Asselain et al. that the presence of lactic acid is a manifestation of lactic acid bacteria, of acetic acid for acetic acid bacteria, that of butanediol and glycerol to presence of yeasts and presence of mannitol to *Botrytis cinerea*.

Thus, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to modify teachings from Patz et al. and Asselain et al. according to the teachings from Singleton et, Ui et al., Omori et al. and Sponholz et al. to apply infrared spectroscopy/spectrophotometry to analyze wine, because each one of the prior art reference teach methods to analyze wine and to determine concentrations of different components in wine. While Patz et al. teach infrared spectrophotometry and chemometric methods to analyze wine/liquid samples, Asselain et al., remedy the deficiency in teachings of Patz et al. by teaching the exact mathematic equations to identify different components in wine and to obtain the concentration of different components, and Singleton et al., Abstracts from each of Ui et al., Omori et al. and Sponholz et al. remedy the deficiency in teachings of both Patz et al. and Asselain et al. that the presence of lactic acid,

acetic acid, butanediol and glycerol or mannitol in said samples manifests presence of lactic bacteria, acetic bacteria, yeasts and *Botrytis cinerea* respectively.

From the teachings of the references cited *supra*, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

**Conclusion**

17. No Claims are allowed.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Kailash C. Srivastava whose telephone number is (703) 605-1196. The examiner can normally be reached on Monday-Thursday from 7:30 A.M. to 6:00 P. M. (Eastern Standard Time or Eastern Daylight Saving Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn, can be reached on (703) 308-4743 Monday through Thursday. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3014.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Kailash C. Srivastava, Ph.D.
Patent Examiner
Art Unit 1651
(703) 605-1196

June 23, 2003

Jon P. Weber, Ph.D.
Primary Examiner